International Calls to Mobiles

© PRIMETRICA, INC. 2005

International Calls to Mobiles

Over the past decade, mobile telephony has evolved from a niche market to one of the key drivers of revenues and costs in international telecommunications. In the process, termination of calls to mobile networks has become a matter of concern to fixed-line carriers and regulators worldwide.

This report, prepared on behalf of the CTIA—The Wireless Association™ (CTIA) summarizes the TeleGeography research group's findings with respect to the volume of traffic worldwide that is terminated to mobile phones, and the cost to carriers of mobile termination. It will also examine the volume of mobile terminated traffic that is originated in the United States, and the impact on U.S. carriers of mobile termination abroad.

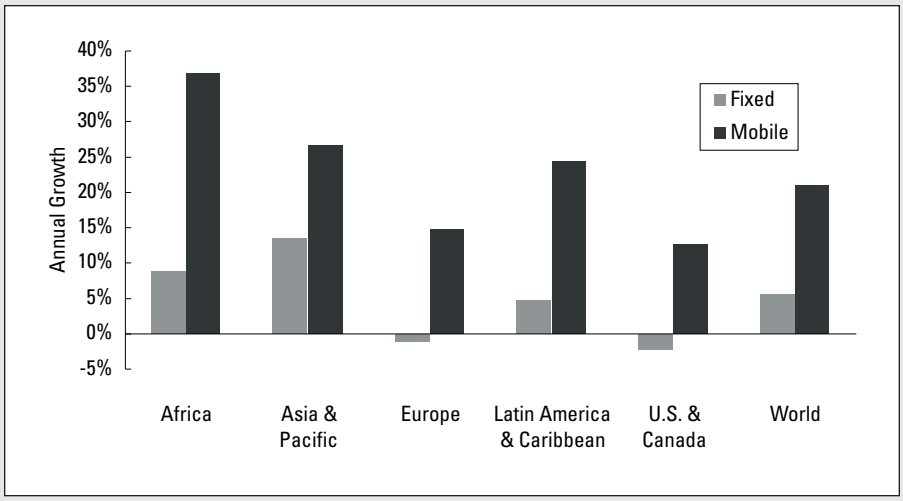
The data presented in this section are drawn from several sources. The mobile-originated and mobile-terminated international traffic statistics are based on data collected directly from major international carriers. The mobile and fixed line subscriber information is extracted from TeleGeography research's *GlobalComms Database*. Subscriber data from the ITU were also used for some countries.

Mobile Traffic Patterns

Thanks to significant subscribership increases, mobile telephony now plays a central role in international telecommunications. The number of worldwide mobile subscribers grew 21 percent in 2003 (see Figure 1), while the number of fixed line subscribers increased approximately 5.5 percent. In fact, the number of fixed-line subscribers actually declined two percent in the U.S. & Canada, and one percent in Europe in 2003. As a growing number of users give up their fixed lines and opt for mobile lines only, the importance of mobiles will continue to grow.

The growth of mobile subscribers is both an opportunity and a challenge for international carriers. Mobile subscriber growth has created new calling opportunities, and contributed to increasing total call volumes. Since few mobile phone companies operate their own international networks, they must rely on wholesale carriers to terminate traffic outside of their customer base. As more international traffic is generated on mobiles, fixed line carriers are trying to capture as much of this traffic as possible to offset the gradual decline in fixed-line traffic.

Figure 1. Mobile and Fixed Subscriber Growth by Region, 2002-2003



Source: TeleGeography research and ITU

© PriMetrica, Inc. 2005

Mobiles account for a growing share of both originated and terminated international traffic. In 2003, mobile-terminated and -originated calls grew faster than the number of new mobile subscribers, indicating that the average number of minutes of use per subscriber has grown as well as the absolute number of subscribers. Despite the fact that mobiles outnumber fixed lines in every region except the U.S. and Canada, calls to fixed lines account for over 70 percent of total international traffic. In 2003, 51 billion minutes of traffic, accounting for almost 30 percent of all international calls, were terminated on mobile phones. Approximately 11.9 billion minutes of mobile-terminated traffic originated in the U.S., equal to 23 percent of all mobile-terminated traffic, and seven percent of all international traffic.

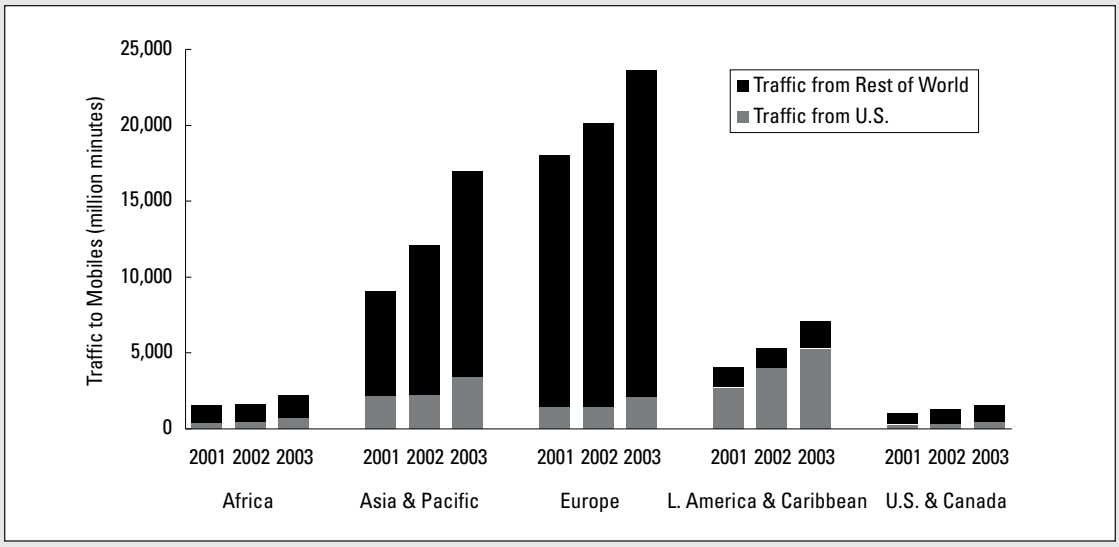
The volume of international calls to and from mobile phones is not balanced. In 2003, mobile-terminated international traffic was 43 percent greater than mobile-originated international traffic. Almost half of this traffic was terminated in Europe, and one-third in Asia. Growth rates of mobile-terminated traffic varied greatly in 2003. Mobile-terminated traffic grew 39 percent in Asia, outpacing mobile subscriber growth of 27 percent. By contrast, mobile terminated traffic in Europe grew 17 percent, largely in line with mobile subscriber growth (see Figure 2. Mobile-Terminated International Traffic by Region, 2001-2003). Although Africa represents a small proportion of mobile-terminated traffic compared to the rest of the world, 30 percent of international calls destined for Africa are to mobile subscribers.

Termination Costs

In most countries, the cost of terminating traffic on mobile networks is higher than terminating traffic on fixed line networks, resulting in a significant differential between call prices to mobile and fixed phones. Termination rates are related to the type of mobile payment structure in place. Two payment structures exist for mobile services: calling party pays (CPP) and receiving party pays (RPP). In the former, the party originating the call to a mobile phone

© PRIMETRICA, INC. 2005

Figure 2. Mobile-Terminated International Traffic by Region, 2001-2003



Source: TeleGeography research

© PriMetrica, Inc. 2005

pays for access to the mobile network. That is, the mobile user receiving the call incurs no charge for incoming traffic to her handset. Under the RPP scheme, the charge for connecting the fixed-line call to the mobile network is incurred by the mobile user receiving the call; the calling party pays the same price as for a comparable call to a fixed-line phone. RPP is used in the U.S. and Canada, while most of the world uses the CPP payment structure.

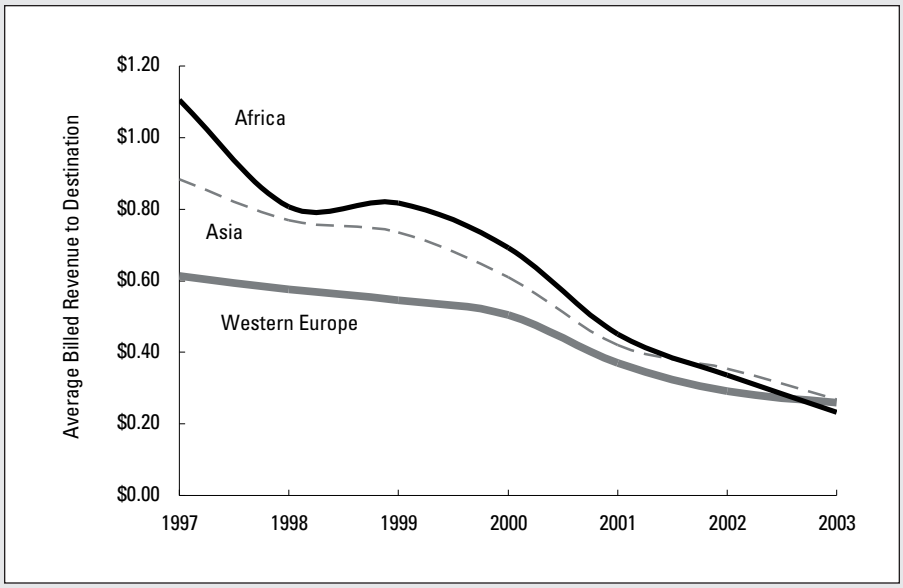
Impact of Mobile Termination on Carrier Costs

Termination rates play a large role in determining the overall cost of international telephone calls. While the cost of origination access fees and of international circuit leases amount to just a few cents per minute or less, termination rates are the dominant component in overall call cost. As a result, differences in wholesale call prices to mobiles versus fixed lines are primarily a reflection of differences in termination rates. In RPP countries, such as the United States and Canada, there are no additional charges associated with mobile termination, and wholesale prices to fixed and mobile lines are identical. In other countries, the costs of fixed and mobile termination vary.

To illustrate the economic effects of terminating international traffic on mobile networks, TeleGeography estimated the costs of mobile termination based on wholesale pricing information obtained from Arbinet, a wholesale minutes exchange based in New York City. Though wholesale rates may not be an exact reflection of actual carrier costs, they serve as a useful proxy, as differences in wholesale rates between fixed and mobile termination mirror the differences in interconnection rates.

The wholesale rates charged by carriers on the Arbinet exchange reflect the *de facto* cost of mobile termination, and may actually be somewhat lower than the official fixed-to-mobile interconnection rate. TeleGeography data indicates that 50 percent of mobile terminated traffic worldwide (and to Western Europe) is delivered via wholesale service providers. The

Figure 3. U.S. Per-Minute Call Revenues by Destination, 1997-2003



Notes: Data reflect average revenue per minute on U.S. outgoing traffic carried by AT&T, MCI, and Sprint.
Source: TeleGeography research © PriMetrica, Inc. 2005

use of gray market routing arrangements, such as SIM boxes (which convert fixed-line calls to mobile calls to take advantage of lower mobile-to-mobile interconnection rates), can enable carriers to terminate traffic at prices below the official fixed-to-mobile rate. In some countries, such as Belgium, regulators have ruled such practices to be legal. While regulators in other countries, such as the U.K. have found SIM boxes to be illegal, wholesale prices suggest that carriers have found means of reducing fixed-to-mobile interconnection costs.

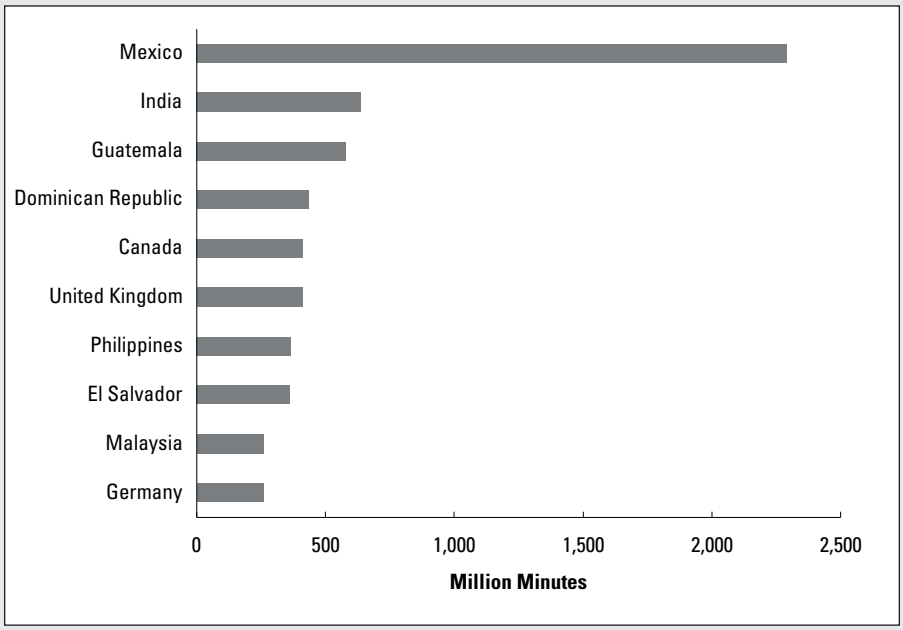
Distribution of U.S.-Originated Traffic to Mobiles

Most U.S. international carriers have passed on interconnection costs to customers. As a result, mobile termination rates have had a noticeable impact on call price trends to certain countries.

The role of mobile termination rates in determining U.S. call costs and prices should be viewed in perspective. U.S. carriers sent approximately 11.9 billion minutes of mobile terminated international traffic, equivalent to approximately 23 percent of total U.S. traffic in 2003. The ten largest destinations accounted for approximately 51 percent of this mobile terminated traffic (see Figure 4). Fixed and mobile termination costs were relatively similar in eight of the ten countries receiving the largest volume of mobile-terminated traffic from the U.S. In only two of the ten countries (the United Kingdom and Germany) did mobile termination costs significantly exceed fixed-line termination costs. The U.S. share of the mobile termination costs for these two countries is less than 10 percent of the total costs of all mobile-terminated traffic to these countries. Based on the underlying Arbinet data for 2002 and 2003, the de facto cost of mobile termination for the top ten countries for U.S.-

© PRIMETRICA, INC. 2005

Figure 4. Top 10 International Mobile Terminated Destinations from U.S.



Notes: Data reflect minutes of incoming international minutes from U.S. callers terminated on mobile phones in each country in 2003.

Source: TeleGeography research

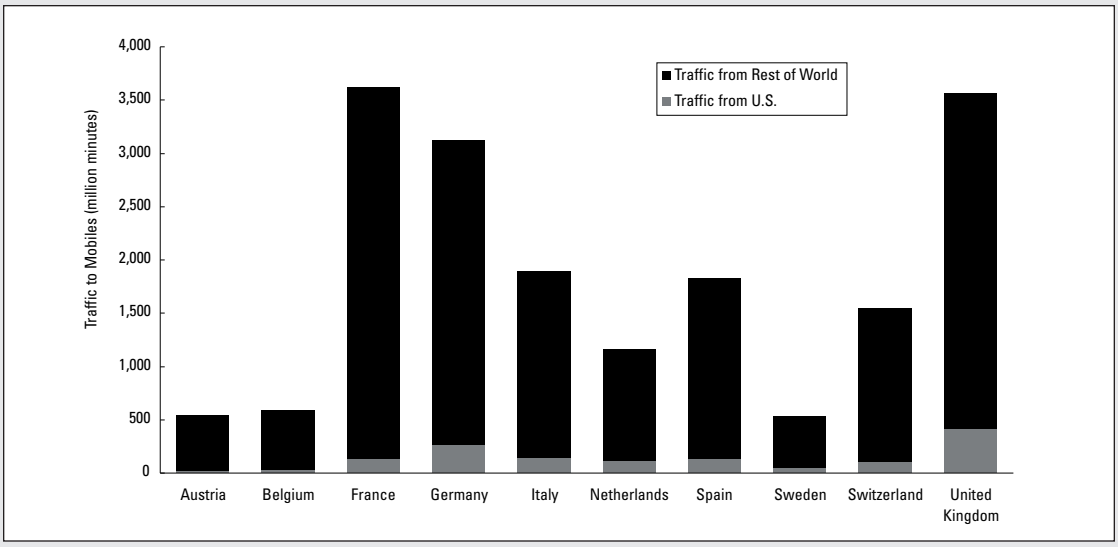
© PriMetrica, Inc. 2005

originated traffic fell 44 percent from 2002 to 2003. (The weighted average cost of mobile termination in the top ten countries for each year was derived from the Arbinet exchange wholesale rate, multiplied by the total volume of international traffic terminated on mobile phones in each country for that year. The percentage change between years was then calculated.) Even omitting Canada (as relying on a RPP payment structure), the de facto cost of mobile termination for the remaining top nine countries fell 44 percent over that period. From 2001 to 2003, for nine of the top ten destinations traffic to mobiles grew 75 percent, while total termination payments fell 14 percent. In effect, the average mobile termination cost fell 50 percent for those nine countries. In the tenth country, traffic grew more than 42 percent from 2002 to 2003, while total mobile termination payments remained flat, indicating that the cost of mobile termination fell during that period.

While the cost of mobile termination to U.S. carriers is not insignificant, the burden of mobile costs is primarily borne by callers in Europe. Most international telephone calls are made to neighboring countries. U.S. callers account for approximately 7.5 percent of international traffic terminated on European mobile phones, while callers from other European countries account for more than two-thirds of this traffic (see Figure 5).

Moreover, international calls only account for a relatively small proportion of total mobile-terminated traffic; the great majority is generated domestically within each country. For example, the Swedish regulatory authority, PTS, reported that 3.344 billion minutes of traffic were terminated to mobile phones in Sweden in 2003. TeleGeography estimates that Swedish mobile subscribers received approximately 544 million minutes of international

Figure 5. Mobile-Terminated International Traffic in Select European Countries, 2003



Notes: Data show top 10 European countries ranked by total international traffic terminated to mobile phones in 2003.
Source: TeleGeography research

© PriMetrica, Inc. 2005

traffic, accounting for approximately 15 percent of Sweden's total mobile terminated traffic. U.S. callers made approximately 45 million minutes of calls to mobile subscribers in Sweden, and accounted for slightly more than one percent of total traffic to mobile phones in Sweden. Although mobile termination rates have certainly shaped U.S. international carrier costs and prices, these rates have had a far greater impact on intra-regional and domestic traffic flows.

Regulation

Since its inception, the mobile service market has attracted significant regulatory attention. During the mobile industry's beginning, national regulatory agencies (NRAs) focused on stimulating mobile industry growth and competition, often through implementing calling party pays (CPP) payment structures and pricing constraints on mobile-to-fixed interconnection. Now, NRAs are scrutinizing the charges levied for connection to mobile networks and, in some cases, intervening on behalf of fixed-line operators.

Termination rates in the countries of the European Union, long a leader in both international traffic and mobile penetration, have attracted the attention of European fixed-line operators as well as that of the Office of the United States Trade Representative (USTR) and the Federal Communications Commission (FCC). In response to criticism and as part of the implementation of the European Telecommunications Regulatory Package, almost every European NRA has undertaken studies of the mobile market, with particular attention paid to interconnection issues. The results have varied, ranging from the establishment of best-practice guidelines for setting interconnection prices (in France) to direct mandates for cost-oriented pricing (in Sweden) to no formal intervention (in Germany).

© PRIMETRICA, INC. 2005

Much of the variation in regulatory action hinges on the market definitions applied to mobile operators. Where operators are deemed to have significant market power (SMP), they are generally subject to greater regulatory control. For example, PTS, the Swedish regulator, ruled that Telia's mobile market share in Sweden constituted significant market power, and required Telia to provide cost-oriented interconnection to its mobile network. The Swedish regulator also required competing mobile operators' interconnection rates to be within 10 percent of Telia's rates in order not to warrant further regulatory investigation and potential action.

In the United Kingdom, Ofcom has ruled that each of the four mobile operators wields SMP over mobile termination, on the basis of their monopoly over interconnection to their own wireless networks. As a result, all four operators are subject to regulatory intervention regarding interconnection. In September 2001, Ofcom released its recommendations for cutting prices and implementing a price cap for termination charges. Mobile operators opposed Ofcom's recommendation and referred the dispute to the Competition Commission. The Commission concurred with Ofcom, suggesting a 15 percent reduction by April 2003 and subsequent reductions over the next three years.

Subsequently, the *European Commission report on European Electronic Communications Regulation and Markets, 2004* (Tenth Report), released December 2004, reviewed the impact of mobile termination rate reductions in the EU nations over the past three years, and suggested that further reductions due to regulatory intervention by NRAs was likely.